

SYNOPSIS OF HALICTINÆ.

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In connection with the study of the pollination of flowers by insects, for several years and in several journals I have published notes on the local Halictinæ, with descriptions of new species and the missing sexes of some which were only known in one sex. This paper is intended to bring my results together in a brief form.

The so-called genus *Halictus* of authors seems to be altogether too heterogenous. I restore *Lasioglossum* and propose two other new genera. I think that the several genera must stand or fall together. The venation shows that *Agapostemon* and *Augochlora* are more closely related to *Halictus*, as here limited, than are *Lasioglossum*, *Evyllaenus* and *Chloralictus*.

As regards the dull greenish or bluish species, the venation shows that *H. fasciatus* belongs to *Halictus*, as here limited, a conclusion which is supported by the form of the pubescent fasciæ. The rest fall into *Chloralictus*, *Paralictus* and *Dialictus*.

Hemalictus, Ckll., holds the same relation to *Evyllaenus* that *Dialictus* holds to *Chloralictus*. It is significant that these two genera are developed from forms in which the vein III_3 is normally enfeebled.

Remarkably different from *Andreninæ*, this nervure is very constant in Halictinæ. I have found it wanting in one specimen of *Chloralictus versatus* and in one of *Evyllaenus cylindricus* received from Pérez, of Bordeaux. I have one specimen of *Oxystoglossa confusa* with the vein *rm* wanting in one wing, and another with veins *rm* and III_3 both wanting in one wing.

Oxystoglossa, Sm., has a definite type which, I judge from the description, belongs to the group having the hind spur finely serrate. The name is therefore used to designate that group.

In this paper vein *rm*=the radio-medial cross-vein=1st cubital nervure; vein III_3 =2nd cubital nervure; vein IV_3 =1st recurrent nervure; vein *a*=the cross-vein element of the arculus=the basal nervure; cell III_{1+2} =the marginal cell; cell III_5 =2nd submarginal cell; cell III_4 =3rd submarginal cell; "segment" refers to the abdomen; "joint" refers to the antenna.

Females.

Front wing with veins beyond IV_3 obsolescent; cells III_4 and III_5 subequal 5.

- Front wing with veins beyond IV_3 not obsolescent; cell III_4 at least nearly twice as long as III_5 1.
1. Labrum flat, ciliate; cell III_5 much wider than long, usually less than $\frac{1}{2}$ as long as III_4 ; cell III_{1+2} pointed on costa; vein IV_3 near end of cell III_5 ; metathorax usually strongly rugose; abdomen usually more or less red; hind spur finely pectinate; hind knee plate obsolete; rima on segment 5 obsolete. *Sphecodes*.
Labrum at apex produced, laterally compressed, pectinate; rima present 2.
2. Black or dull greenish; segments of abdomen with apical pubescent fasciæ; cell III_{1+2} subappendiculate; vein IV_3 beyond the middle or near end of cell III_5 ; hind knee plate lanceolate; vein *a* rather suddenly bent at lower third *Halictus*.
Bright golden green, at least the head and thorax; segments of abdomen with pubescent fasciæ basal or wanting 3.
3. Metathorax sharply truncate, the truncation circular, bordered by salient rim; hind spur with three broad spines; hind knee plate obsolete; cell III_{1+2} subappendiculate; vein IV_3 beyond middle of cell III_5 *Agapostemon*.
Metathorax rounded posteriorly, at least above, the truncation, when evident, subquadrate 4.
4. Hind spur with 4-6 long teeth; cell III_{1+2} subappendiculate; vein IV_3 interstitial with III_5 , or entering cell III_4 ; vein *a* rather strongly bent about the middle; hind knee plate obsolete *Augochlora*.
Hind spur finely serrate; cell III_{1+2} usually pointed on costa; vein IV_3 usually interstitial with III_5 , rarely entering cell III_4 ; vein *a* regularly arcuate; hind knee plate present, lanceolate *Oxystoglossa*.
5. Front wing with vein III_5 not obsolescent; cell III_{1+2} subappendiculate; vein IV_3 near end of cell III_5 ; hind spur finely serrate; insect unusually smooth and opaque; segments 2-4 with basal pubescent fasciæ *Lasioglossum*.
Front wing with vein III_5 also obsolescent or absent; vein IV_3 near end of cell III_5 or interstitial with vein III_5 6.
6. Black *Erylaeus*.
Dull greenish or bluish, at least the head and thorax; hind spur with 3-5 long teeth 7.

7. Vein III_5 wanting *Dialictus*.
 Vein III_5 present 8.
 8. Apex of labrum produced, laterally compressed, pectinate; mandibles
 dentate; cheek narrow *Chloralictus*.
 Apex of labrum broadly rounded, flat, ciliate; mandibles simple;
 cheeks and face broad; scopa, and rima of segment 5,
 obsolete *Paralictus*.

Males.

- Segments with apical pubescent fasciæ; black or dull
 greenish *Halictus*.
 Segments without apical pubescent fasciæ 1.
 1. Head and thorax dull greenish or bluish. 6.
 Head and thorax bright golden green 4.
 Head and thorax black 2.
 2. Clypeus black, rather densely whitish pubescent; cell III_5 usually
 about $\frac{1}{2}$ as long as III_4 ; abdomen often more or less
 red *Sphcodes*.
 Clypeus anteriorly with a yellowish mark, or black and thinly
 pubescent 3.
 3. Joint 4 a little shorter than $2+3$; cheek broad; metathorax rather
 smooth; segments 2-4 with basal pubescent fasciæ. *Lasioglossum*.
 Joint 4 longer than $2+3$, or only a little longer than 3; those with
 basal pubescent fasciæ always have the metathorax strongly
 rugose *Evylæus*.
 4. Abdomen black, with yellow bands *Agapostemon*.
 Abdomen like the head and thorax 5.
 5. Ventral segments 1-3 rigid, bright green, the others dark, retracted;
 tibiæ green; tarsi pale *Augochlora*.
 Ventral segments dark, except sometimes the middle ones, not rigid
 or retracted; tibiæ pale at least at base and apex... *Oxystoglossa*.
 6. Joint 4 hardly longer than 3; vein III_5 absent *Dialictus*.
 Joint 4 = $2+3$, or nearly; vein III_5 present 7.
 7. Clypeus convex *Chloralictus*.
 Clypeus flat *Paralictus*

HALICTUS, Latr.

Females.

- Dull greenish; hind spur with 4 or 5 teeth *fasciatus*.
 Black, sometimes inclining to ferruginous 1.

1. Wings and legs ferruginous; hind spur finely serrate, with 12 or more teeth.....*parallelus*.
Wings and legs not ferruginous; hind spur with about 6-8 teeth.. 2.
2. Cheek beneath produced into a strong tooth or dentiform angle.....*ligatus*.
Cheek rounded.....*Lerouxii*.

Males.

- Dull greenish; legs yellow.....*fusciatus*.
Black.....1.
1. Femora and wings yellow or ferruginous.....*parallelus*.
Femora black.....2.
 2. Flagellum black; mandibles usually black.....*Lerouxii*.
Flagellum beneath and middle of mandibles yellow.....*ligatus*.

AGAPOSTEMON, Guérin.

Females.

- Abdomen black.....*viridulus*.
Abdomen green.....1.
1. Mesonotum with a distinct double punctuation.....*Texanus*.
Mesonotum without a distinct double punctuation.....2.
 2. Metathorax strongly longitudinally rugose, without enclosure.....*radiatus*.
Metathorax coarsely reticulated, a triangular space finely rugose.....*splendens*.

Males.

- Abdomen with six yellow bands.....2.
Abdomen with five yellow bands.....1.
1. Ventral segment 4 thin, entire, 6 with a median carina....*viridulus*.
Ventral segment 4 thickened, emarginate, margin depressed between the gibbous sides.....*Texanus*.
 2. Hind femora robust, their metatarsi carinate; basal middle of abdomen ferruginous.....*splendens*.
Hind femora less robust, their metatarsi simple; basal middle of abdomen black, with a greenish tinge.....*radiatus*.

AUGOCHLORA, Sm

- Segment 2 rather opaque, closely punctured, densely ciliate..*fervida*.
Segment 2 shining, sparsely punctured, hardly ciliate.....*viridula*.

OXYSTOGLOSSA, Sm.

Females.

- Sides of mesonotum not reticulated; cell III₁₊₂ subappendiculate.....*pura*.

Sides of mesonotum reticulated ; cell III_{1+2} pointed on costa 1.

1. Larger, greener; antennæ, tegulæ and legs darker *confusa*.
Smaller, more brassy ; antennæ, tegulæ and legs paler *similis*.

Males.

Ventral segment 4 not emarginate, greenish *pura*.

Ventral segment 4 emarginate, not greenish 1.

1. Larger, greener ; antennæ, tegulæ and legs darker *confusa*.
Smaller, more brassy ; antennæ, tegulæ and legs paler *similis*.

LASIOGLOSSUM, Curtis (Type *Melitta xanthopus*, Kby.).

Females.

Metathorax sharply truncate, the posterior face with sharp edge *fuscipenne*.

Metathorax rounded posteriorly, no distinct posterior face 1.

1. Clypeus less produced ; mesonotum more shining ; metathorax more rugose, more shining, the edge more salient *Forbesii*.

Clypeus produced ; mesonotum and metathorax smooth and opaque *coriaceum*.

Males.

Face subquadrate ; apex of one mandible reaching base of the other ; tarsi dark *coriaceum*.

Face narrowed below ; apex of one mandible reaching the middle of the other ; tarsi whitish *Forbesii*.

EVYLAEUS, gn. nov. (Type *Halictus arcuatus*, Rob.).

Females.

Abdomen with pubescent fasciæ interrupted or wanting 2.

Abdomen with pubescent fasciæ continuous ; metathorax coarsely rugose 1.

1. Metathorax sharply truncate ; hind spur with long distinct teeth ; segment 1 impunctate *truncatus*.

Metathorax a little rounded behind ; hind spur with teeth shorter, more oblique, less distinct ; segment 1 finely punctured . . *arcuatus*.

2. Hind spur pectinate, with numerous fine, rather long, teeth *pectinatus*.

Hind spur with 4 or 5 distinct teeth 3.

3. Metathorax without an enclosed space 5.

Metathorax with an enclosed space 4.

4. Enclosure subtriangular ; metathorax elsewhere densely pubescent *nelumbonis*.

Enclosure semicircular ; metathorax bare or nearly so . . . *pectoralis*.

5. Segments 2-4 with white pubescent patches on each side *quadrinaculatus*.
 Segments 2-4 without white pubescent patches..... *Foxii*.

Males.

- Antennæ long, joint 4 longer than 2 + 3 3.
 Antennæ short, joint 4 hardly longer than 3 1.
 1. Clypeus anteriorly, mandibles, knees and tarsi, whitish *quadrinaculatus*.
 Clypeus anteriorly and the legs dark 2.
 2. Enclosure of metathorax semicircular..... *pectoralis*.
 Enclosure triangular..... *nelumbonis*.
 3. Metathorax finely rugose, apex gibbous, shining; small..... *Foxii*.
 Metathorax coarsely rugose; scutellum subbilobed; flagellum festooned; tarsi whitish; larger..... 4.
 4. Segment 1 finely, distinctly, sparsely, punctured; apical margins of segments narrowly pale testaceous..... *arcuatus*.
 Segment 1 almost impunctate; insect more slender, blacker, knees more whitish..... *truncatus*.

CHLORALICTUS, gn. nov. (Type *Halictus Cressonii*, Rob.).

Females.

- Tegulæ not punctate 2.
 Tegulæ punctate 1.
 1. Metathorax sharply truncate, with a sharp edge; wing whitish..... *nymphæarum*.
 Metathorax hardly truncate, the edge blunt..... *tegularis*.
 2. Abdomen not metallic 6.
 Abdomen greenish or bluish..... 3.
 3. Mesonotum shining, sparsely punctured; abdomen thinly pubescent; head hardly longer than broad; cheek broad and rounded..... 5.
 Mesonotum opaque, finely rugose, closely punctured; abdomen densely pubescent; head distinctly longer than broad; cheek narrow 4.
 4. Wing and pubescence yellowish; mesonotum brassy..... *pilosus*.
 Wing and pubescence whitish; mesonotum pale greenish..... *pruinus*.
 5. Dark blue..... *cæruleus*.
 Brassy green *zephyrus*.
 6. Mesonotum rather finely punctured..... 8.
 Mesonotum rather coarsely punctured 7.

7. Wing and nervures whitish *albipennis*.
Wing and nervures ordinary *Cressonii*.
8. Head distinctly longer than broad ; cheek narrow ; mesonotum quite opaque with fine roughness, sparsely punctured, often a little brassy *cereopsis*, sp. nov.
Head hardly longer than broad ; cheek broad 9.
9. Abdomen yellowish testaceous *testaceus*.
Abdomen darker 10.
10. Abdomen obovate ; segments 1-2 shining ; 3-5 darker, more opaque, with sparse closely-appressed hairs ; mesonotum shining, sparsely, finely, punctured ; metathorax nearly smooth *sparsus*, sp. nov.
Abdomen more oval, more densely pubescent, the hairs less appressed 11.
11. Disc of metathorax bordered by a raised line, especially laterally *Illinoensis*.
Disc of metathorax not bordered by a raised line 12.
12. Abdomen brown, segments 3-5 closely pubescent. . *versatus*, sp. nov.
Abdomen more black, segments 3-5 less pubescent 13.
13. Raised lines of disc of metathorax not reaching the apex, the latter rounded *obscurus*.
Raised lines of metathorax reaching apex, which is truncate *smilacine*.

Males.

- Tegulæ not punctate 2.
Tegulæ punctate 1.
1. Metathorax with semicircular enclosure ; wing whitish. *nymphæarum*.
Metathorax without enclosure ; wing ordinary *tegularis*.
 2. Abdomen without greenish or bluish reflection 7.
Abdomen greenish or bluish 3.
 3. Mesonotum smooth and shining, finely and sparsely punctured ; head hardly longer than wide 6.
Mesonotum finely rugose, opaque, closely punctured 4.
 4. Head a little longer than wide ; clypeus without yellowish ; the greenish tinge of abdomen slight. *versatus*, sp. nov.
Head much longer than wide ; apex of clypeus usually yellowish ; abdomen distinctly greenish 5.
 5. Pubescence above and nervures and stigma yellowish *pilosus*.

- Pubescence above and nervures and stigma whitish *pruinus*.
6. Dark blue *cæruleus*.
Greenish ; abdomen usually more or less testaceous *zephyrus*.
7. Abdomen and tibiæ almost entirely testaceous *zephyrus*.
Abdomen not testaceous ; tibiæ black except often at base and apex 8.
8. Sides of metathorax and pleura distinctly punctured, the latter beneath with a distinct fovea ; mesonotum smooth, shining, coarsely punctured *foveolatus*, sp. nov.
Sides of metathorax and pleura not distinctly punctured 9.
9. Vein III₅ and beyond almost obsolete ; head much longer than wide ; mesonotum finely rugose, opaque, sparsely, finely punctured ; antennæ short ; tarsi pale *coreopsis*, sp. nov.
Vein III₅ and beyond ordinary ; head not, or hardly, longer than wide 10.
10. Mesonotum finely punctured 12.
Mesonotum coarsely punctured, shining 11.
11. Wing white, nervures and stigma white *albipennis*.
Wing ordinary, nervures and stigma dark ; metathorax coarsely reticulated, with a semicircular enclosure bordered by a sharp edge *Cressonii*.
12. Mesonotum shining ; head wider than thorax ; metathorax at apex gibbous, smooth, shining ; nervures and stigma dark ; abdomen subclavate, almost impunctate, usually darker towards apex ; length 4 mm *sparsus*, sp. nov.
Mesonotum opaque ; abdomen hardly subclavate 13.
13. Abdomen bronze black, minutely punctured, bare impunctate apical margins of segments broad ; nervures and stigma dark *obscurus*.
Abdomen less black, distinctly punctured, bare impunctate apical margins of segments narrow, often pale testaceous ; nervures and stigma pale : length, 4-6 mm *versatus*, sp. nov.

PARALICTUS, Rob.

Females.

- Cheek regularly rounded ; face narrowed below *simplex*.
Cheek with rounded angle below middle of eye ; face narrowed below *platyparius*.
Cheek with rounded angle a little above middle of eye ; face not narrowed below *cephalicus*.